Small Business Innovation Research/Small Business Tech Transfer

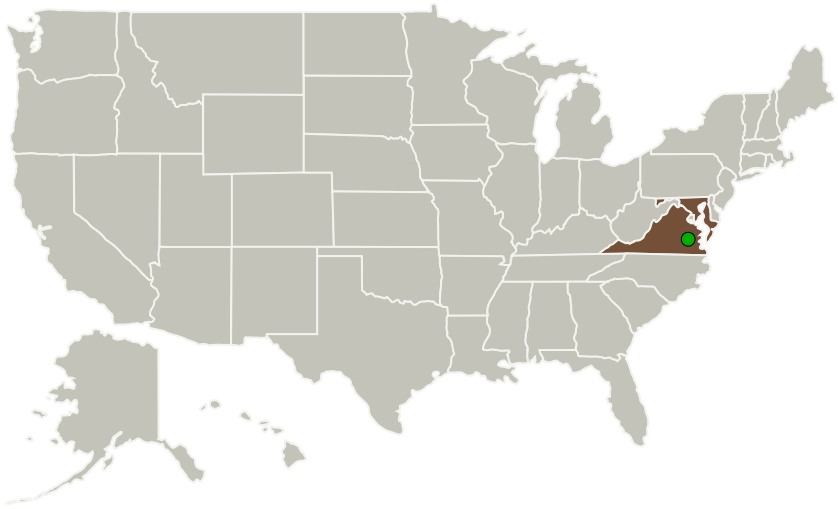
METROSIM: Metroplex-Wide Flight Planning and Optimization, Phase I

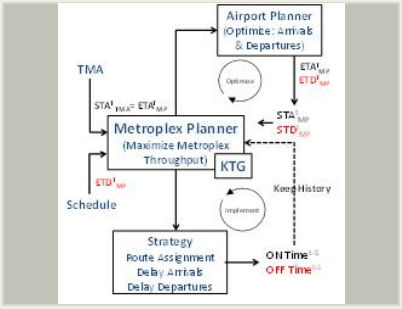
Completed Technology Project (2013 - 2013)

Project Introduction

MetroSim is a Metroplex-based arrival, departure, and surface optimization. Linking with both the NASA-developed Traffic Management Advisor (TMA) tool as well as the NASA-developed System Oriented Runway Management (SORM) tool, MetroSim allows airport planners, traffic flow management experts, airline dispatchers, air traffic controllers, and pilots to reduce the uncertainty in operations planning, recover quickly from disruptive events, maintain high throughput even in adverse weather conditions, and handle the uncertainties associated with weather forecasts. To accomplish all these goals simultaneously, the MetroSim architecture contains a collection of different tools, some of which are simulations, some of which are physics-based computations, and some of which are mathematical optimization calculations. These tools all interoperate in a distributed computational environment to provide real-time airport planning and optimization at the Metroplex level for all operations—arrivals, departures, and surface movements. The type of each tool is chosen to be the best and fastest at what it is required to compute.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Intelligent Automation, Inc.	Lead Organization	Industry	Rockville, Maryland
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
Maryland	Virginia

Project Transitions

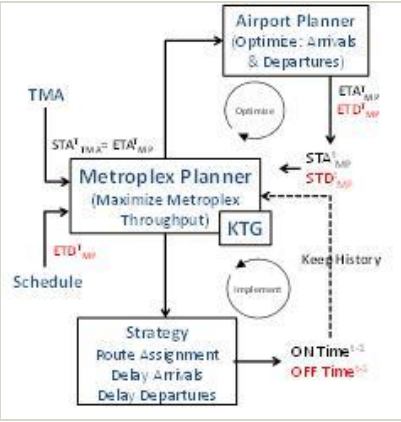
May 2013: Project Start

November 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140377)*

Images



Project Image
METROSIM: Metroplex-Wide Flight Planning and Optimization *(https://techport.nasa.gov/image/136043)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Intelligent Automation, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Frederick Wieland

Co-Investigator:
Frederick Wieland

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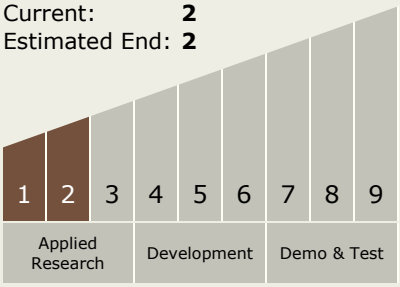
Completed Technology Project (2013 - 2013)

Technology Maturity (TRL)

Start: **1**
Current: **2**
Estimated End: **2**



Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
  - TX16.4 Architectures and Infrastructure

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System